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REMARKS

The above-referenced application is a continuation application 10/664,764 of parent application 09/749,136, filed December 27, 2000. This Amendment is in response to an outstanding Office Action issued in the parent application 09/749,136 on March 17, 2003.

Claims 1 through 9 are pending in the application. Claim 1 has been amended to clarify that the amino acid and sweetener are present in a discrete, stoichiometric molecular ratio of either 1:1 or 1:2, with the proviso that said sweeteners may be the same or different when the molecular ratio is 1:2. Support for this amendment can be found in the application as filed, for example on Page 2, line 28 through Page 3, line 8 and Page 4, line 8 through line 18. Claims 4 and 5 have been cancelled, as their subject matter has been incorporated into Claim 1.

Claims 1 through 9 were rejected in the parent application as unpatentable over the combination Nakajima (EP 0122400), Ebisawa et al. and Ninomiya et al. (GB 1297741) in view of Ledniczky et al (WO 99/04822) and Rayburn (WO 00/12067). It would be useful to consider the invention as recited in the claims before addressing the merits of the rejection.

The claims recite a salt of a basic-reacting amino acid with at least one acidic-reacting sweetener, in which the amino acid and sweetener are present in a discrete, stoichiometric molecular ratio of either 1:1 or 1:2. In aspects of the invention in which the amino acid and sweetener are present in a 1:2 molecular ratio, the sweeteners may be either the same or different.

From a nutritional perspective, it can be highly beneficial to enrich foods with amino acids, particularly arginine and lysine. Unfortunately, amino acids, particularly arginine, have a bitter taste. Rather than merely combine such alkali metal salt sweeteners with amino acids to form a mixture containing individual components, Applicants have found that sweet tasting amino acid-based salts may be formed by reacting artificial sweeteners with amino acids. For

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example, Applicants have found that artificial sweeteners which have been protonated by a strong acid, such as sulfuric acid, may be combined with amino acids to form sweet tasting amino acid-based salts.

In contrast to conventional mixtures, the salts of the claimed invention include amino acid and sweetener in discrete stoichiometric ratios, particularly either a 1:1 or 1:2 ratio. The claimed amino acid salts thus exhibit a beneficial range of sweetness intensity. In aspects of the invention directed to 1:2 amino acid to sweetener ratios, the sweetener may either be the same or different. In further advantageous embodiments of such aspects, two different sweeteners are present within the amino acid-based salt molecule, as recited in Claim 6. By combining two different sweeteners within the same molecule, the time course of sweetness and/or sweetness intensity of the salt may be tailored for a particular application.

The recited amino acid-based salts are an advancement over the sweetened amino acid mixtures which have been heretofore available. Sweetened mixtures are problematic because the individual components, i.e. the amino acid and sweetener, within such mixtures have a tendency to separate, leading to taste inhomogeneities. The primary references (Nakajima, Ebisawa and Ninomiya) are all directed to such sweetened mixtures, as noted by the Examiner. In contrast to the claimed invention, sweetened mixtures are not produced in the recited discrete, stoichiometric molecular ratios of sweetener to amino acid. Hence such mixtures may suffer from a wide variation in the consistency of their sweetness.

Rather than improving the taste of the amino acid, Nakajima is directed to mixtures that purportedly improve the taste of the sweetener. More specifically, Nakajima notes that the potassium salt of acesulfame, i.e. acesulfame K, has been found to have a sweet taste. Nakajima then attempts to improve the taste of acesulfame K by mixing the sweetener with any of a number of additives, including several amino acids. However, Nakajima, whether considered alone or in combination with the art of record, does not teach or suggest the recited salts derived from amino acids and sweeteners. Nakajima most certainly does not teach or suggest salts in which the amino acid and sweetener are present in a discrete, stoichiometric molecular ratio of either 1:1 or 1:2, and particularly not such salts in which the sweeteners may be the same or

different when the molecular ratio is 1:2. Nakajima, directed solely to acesulfame, further does not teach or suggest amino acid – based salts that include two different sweeteners within the same molecule, as recited in Claim 6.

Ebisawa et al. similarly discloses a mixture of a commercially available sweetener, specifically aspartame, and an amino acid. Rather than improving the taste of the sweetener, Ebisawa is directed to the use of the amino acids as a processing aid during aspartame production. More particularly, Ebisawa discloses the use of amino acids to form thicker, firmer crystals during aspartame production. Ebisawa, whether considered alone or in combination with the art of record, does not teach or suggest salts in which the amino acid and sweetener are present in a discrete, stoichiometric molecular ratio of either 1:1 or 1:2, and particularly not such salts in which the sweeteners may be the same or different when the molecular ratio is 1:2. Ebisawa, directed solely to aspartame, further does not teach or suggest amino acid – based salts that include two different sweeteners within the same molecule, as recited in Claim 6.

Ninomiya is also directed to a mixture incorporating conventional artificial sweetener. Ninomiya initially notes that sodium saccharin is frequently employed as an artificial sweetener. Ninomiya then purportedly reduces the unpleasant after-taste associated with sodium saccharin by adding tryptophan to the sweetening composition. Accordingly, Ninomiya, whether considered alone or in combination with the art of record, does not teach or suggest salts in which the amino acid and sweetener are present in a discrete, stoichiometric molecular ratio of either 1:1 or 1:2, and particularly not such salts in which the sweeteners may be the same or different when the molecular ratio is 1:2. Ninomiya, directed solely to sodium saccharin, further does not teach or suggest amino acid – based salts that include two different sweeteners within the same molecule, as recited in Claim 6.

The secondary references do not cure the deficiencies within the primary references. None of the secondary references are directed to amino acids, much less teach or suggest salts comprising amino acid and at least one sweetener. The drug-based chemical compounds within Rayburn or Ledniczky are not chemically or structurally similar to the claimed amino acid-based salts. Applicants respectfully submit that the chemical arts are unpredictable, particularly

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regarding the expected efficacies of various compounds. Thus the efficacies of Rayburn or Ledniczky can not be imputed to the claimed amino acid-based salts, particularly in light of the structural dissimilarities between Rayburn or Ledniczky's drugs and the recited amino acids. Further, there is no similarity in utility between Rayburn or Ledniczky and the claimed amino acid-based salts. Rayburn and Ledniczky are each directed to several families of drugs, for example anti-anxiety agents (Rayburn) or spasmolytic agents (Ledniczky). In contrast, the claimed amino acids are primarily used as food additives. Applicants respectfully submit that the claimed invention is patentable, based solely on the lack of similarity of chemical structure and utility for the claimed invention versus the art of record.

In addition, Rayburn actually teaches away from the claimed amino acid-based salts. Rayburn is directed to mixtures of non-alkaloids, i.e. non-nitrogenous compounds, with sodium saccharinate. Rayburn, limited to non-alkaloids, thus teaches away from the recited amino acids. Rayburn further merely notes that his compounds may be synthesized by salt interchange on admixture of sodium saccharinate and acid addition salts of medicinal organic bases. Rayburn thus certainly does not teach or suggest amino acid-based salts in which the amino acid and sweetener are present in a discrete, stoichiometric molecular ratio of either 1:1 or 1:2, and particularly not such salts in which the sweeteners may be the same or different when the molecular ratio is 1:2. Rayburn is further directed to sodium saccharide alone, thus Rayburn clearly does not teach or suggest amino acid - based salts that include two different sweeteners within the same molecule, as recited in Claim 6.

Similarly, Ledniczky does not teach or suggest the recited amino acids. Rather, Ledniczky is directed to the use of sweeteners to improve the taste of drugs, such as drotaverin. Ledniczky merely notes that his compounds can be prepared using methods known per se. Consequently, Ledniczky most certainly does not teach or suggest amino acid-based salts in which the amino acid and sweetener are present in a discrete, stoichiometric molecular ratio of either 1:1 or 1:2, and particularly not such salts in which the sweeteners may be the same or different when the molecular ratio is 1:2. Ledniczky further does not teach or suggest amino acid - based salts that include two different sweeteners within the same molecule, as recited in Claim 6.

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Applicants respectfully submit that the claimed invention is patentable in light of the art of record, considered either alone or in combination.

There would have been no motivation to have combined these references. Nakajima and Ninomiya are directed to mixture additives that improve the taste of artificial sweeteners. Ebisawa is directed to mixture additives that improve aspartame production. Rayburn and Ledniczky are directed to improved drugs. There would have been no reason for Nakajima, Ninomiya or Ebisawa to have looked to drug references to improve the taste or processability of commercially available sweeteners.

However, even if one had combined the references (which Applicants submit should not be done), the claimed invention would not have resulted. Nakajima, Ninomiya and Ebisawa are each directed to mixtures intended to improve the taste or processability of commercially available sweeteners. Rayburn is directed to medicinal non-alkaloids, i.e. non-nitrogenous compounds. Ledniczky is directed to sweetened drugs. Accordingly, none of the references, considered either alone or in combination, teach or suggest salts in which the amino acid and sweetener are present in a discrete, stoichiometric molecular ratio of either 1:1 or 1:2, and particularly not such salts in which the sweeteners may be the same or different when the molecular ratio is 1:2. Further the combination of references does not teach or suggest amino acid - based salts that include two different sweeteners within the same molecule, as recited in Claim 6. Applicants respectfully submit that the claimed invention is patentable in light of the cited references.

CONCLUSION

It is respectfully submitted that Applicants have made a significant and important contribution to the art, which is neither disclosed nor suggested in the art. It is believed that all pending claims are now in condition for immediate allowance. It is requested that the Examiner

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telephone the undersigned should the Examiner have any comments or suggestions in order to expedite examination of this case.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 50-2193.

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Respectfully submitted,

K. Schweitzer

Klaus Schweitzer
(See attached Limited Recognition Form)
ProPat, L.L.C.
2912 Crosby Road
Charlotte, North Carolina 28211-2815
Telephone (704) 365-4881
Fax (704) 365-4851

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